Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of manufacturing a heat exchanger comprising:

(a) simultaneously co-extruding a first composition and a second composition to form one or more two-component filaments, the one or more filaments including the first composition encased in the second composition;

(b) mechanically processing the one or more filaments to arrange the one or more filaments in a predetermined orientation to provide a green body by depositing the filaments onto a working surface in one or more layers;

(c) subjecting the green body to conditions effective for removing the first composition from the one or more filaments and for sintering the second composition to provide a heat exchanger including one or more channels having walls made of the sintered second composition for containing coolant flow, the channels having inner diameters of no more than about 2000 microns.

2. (Cancelled)

3. (Original) The method of claim 1 wherein the first composition is a composition that is soluble in at least one solvent and wherein the first composition is removed from the green body by contacting the green body with the solvent.

4. (Original) The method of claim 3 wherein the solvent is water.

5. (Original) The method of claim 1 wherein the first composition is a thermally degradable composition and wherein the first composition is removed from the green body by heating to a temperature and for a time effective for removing the first composition.

6. (Original) The method of claim 1 wherein the second composition is selected from the group consisting of ceramic oxides, ceramic carbides, ceramic nitrides, ceramic borides, ceramic silicides, metals, and intermetallics, and combinations thereof.

7. (Original) The method of claim 6 wherein the second composition is silicon carbide.

8. (Original) The method of claim 1 wherein the second composition includes a material effective for enhancing the thermal conductivity of the heat exchanger.

9. (Previously presented) The method of claim 8 wherein the material is a nano additive selected from the group consisting of carbon black, carbon, silicon carbide, carbon nanotubes and nano fibers.

10. (Previously presented) The method of claim 9 wherein the nano additive is present in an amount of between about two to about five weight percent based on the weight of the second composition.

11. (Original) The method of claim 1 wherein the method includes depositing a thin layer of a material on an outer surface of the heat exchanger to enhance the thermal conductivity of the heat exchanger.

12. (Original) The method of claim 11 wherein the layer of material is deposited by a chemical vapor deposition process.

13. (Original) The method of claim 1 wherein the method includes depositing a metallic layer onto a surface of the heat exchanger by a metallization process.

14. (Original) The method of claim 1 wherein the method includes integrally forming one or more external protrusions on the green body.

15-26. (Canceled)

27. (Previously presented) The method of claim 1 wherein the channels have inner diameters of between about 50 microns to about 2000 microns.

28. (Previously presented) The method of claim 27 wherein the inner diameters of the channels are between about 50 to about 100 microns.

29. (Previously presented) The method of claim 1 wherein the channels are arranged in the same direction.

30. (Previously presented) The method of claim 1 wherein the filaments are arranged in two or more layers and at least two adjacent layers are arranged with the filaments positioned at 90° to one another to provide a heat exchanger having multi-directional channels.

31. (Previously presented) The method of claim 1 wherein the channels are curved.

32. (New) The method of claim 1, further comprising:

(d) connecting a first manifold to a first wall of the heat exchanger; and

(e) connecting a second manifold to a second wall of the heat exchanger.